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Optimal Timing to Begin an Active Rehabilitation Program After a Hip Fracture: A Rapid Review

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Rapid Review Methodology

Clinical questions are developed by the Division of Evidence Development and Standards at Health Quality Ontario in consultation with experts, end-users, and/or applicants in the topic area. A systematic literature search is then conducted to identify relevant systematic reviews, health technology assessments, and meta-analyses; if none are located, the search is expanded to include randomized controlled trials (RCTs) and guidelines. Systematic reviews are evaluated using a rating scale developed for this purpose. If the systematic review has evaluated the included primary studies using the GRADE Working Group criteria (http://www.gradeworkinggroup.org/index.htm), the results are reported and the rapid review process is complete. If the systematic review has not evaluated the primary studies using GRADE, the primary studies included in the systematic review are retrieved and a maximum of two outcomes are graded. If no well-conducted systematic reviews are available, RCTs and/or guidelines are evaluated. Because rapid reviews are completed in very short timeframes, other publication types are not included. All rapid reviews are developed and finalized in consultation with experts.

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Table of Contents

List of Abbreviations

ADL	Activities of daily living
AMSTAR	Assessment of Multiple Systematic Reviews
FIM	Functional Independence Measure
GRADE	Grading of Recommendations Assessment, Development and Evaluation
HQO	Health Quality Ontario
RAP	Rehabilitation Activities Profile
RCT	Randomized controlled trial
TUG	Timed-Up-and-Go

Background

Objective of Analysis

To evaluate the optimal timing to begin an active rehabilitation program after hip fracture surgery.

Clinical Need and Target Population

It is generally accepted that active rehabilitation programs are an integral component of treatment following hip fracture surgery to encourage a full recovery for patients. (1-4) Rehabilitation programs typically include a combination of treatments by nurses, physiotherapists, occupational therapists and other specialists. (2;3) The programs are delivered in various settings with some offered in an inpatient rehabilitation facility while others are outpatient programs conducted either in the patient's home or in a community-based rehabilitation facility. (1-4) Approaches to implementing rehabilitation also vary, with programs ranging in frequency, duration and intensity. (1-4)

The Canadian 2011 National Hip Fracture Toolkit recommends that patients should transition from acute care to active rehabilitation settings within the first week after hip fracture surgery. (1) However, uncertainty remains as to the ideal time to begin rehabilitation programs. Furthermore, given the variation in these programs, it is unknown if a delay to active rehabilitation impacts their effectiveness regardless of intensity or location.

Rapid Review

Research Question

What is the optimal timing to begin an active rehabilitation program after hip fracture surgery?

Research Methods

Literature Search

A literature search was performed on February 12, 2013, using Ovid MEDLINE, Ovid MEDLINE In-Process and Other Non-Indexed Citations, Ovid EMBASE, EBSCO Cumulative Index to Nursing & Allied Health Literature (CINAHL), the Wiley Cochrane Library, and the Centre for Reviews and Dissemination (CRD) database, for studies published from January 1, 2002, until February 12, 2013. Appendix 1 provides details of the search strategies. Abstracts were reviewed by a single reviewer and, for those studies meeting the eligibility criteria, full-text articles were obtained. Reference lists were also examined for any additional relevant studies not identified through the search.

Inclusion Criteria

- English language (full reports)
- published between January 1, 2002, and February 12, 2013
- meta-analyses, systematic reviews, health technology assessments, randomized controlled trials (RCTs), and guidelines
- studies evaluating timing to begin an active rehabilitation program
- studies with similar active rehabilitation programs in both study arms

Exclusion Criteria

- studies where outcomes of interest cannot be abstracted
- studies evaluating time to early mobility during the immediate postoperative period

Outcomes of Interest

- Up to 2 measures of activities of daily living (ADL), prioritized in the following order:
  1. Functional Independence Measure (FIM)
  2. Instrumental ADLs
  3. Other validated ADL measures

Expert Panel

In December 2012, an Expert Advisory Panel on Episodes of Care for Hip Fractures was struck. The panel was comprised of physicians, personnel from the Ministry of Health and Long-Term Care, and representation from the community.

The role of the Expert Advisory Panel on Episode of Care for Hip Fractures was to contextualize the evidence produced by Health Quality Ontario and provide advice on the appropriate clinical pathway for

a hip fracture in the Ontario health care setting. However, the statements, conclusions, and views expressed in this report do not necessarily represent the views of Expert Advisory Panel members.

Quality of Evidence

The Assessment of Multiple Systematic Reviews (AMSTAR) tool was used to assess the quality of the final selection of systematic reviews. (5) Primary studies were abstracted from the selected reviews and referenced for assessment of the 2 outcomes of interest.

The quality of the body of evidence for each outcome was examined according to the GRADE Working Group criteria. (6) The overall quality was determined to be very low, low, moderate, or high using a step-wise, structural methodology.

Study design was the first consideration; the starting assumption was that randomized controlled trials are high quality, whereas observational studies are low quality. Five additional factors—risk of bias, inconsistency, indirectness, imprecision, and publication bias—were then taken into account. Limitations in these areas resulted in downgrading the quality of evidence. Finally, 3 main factors that may raise the quality of evidence were considered: large magnitude of effect, dose response gradient, and accounting for all residual confounding factors. (6) For more detailed information, please refer to the latest series of GRADE articles. (6)

As stated by the GRADE Working Group, the final quality score can be interpreted using the following definitions:

High	Very confident that the true effect lies close to the estimate of the effect
Moderate	Moderately confident in the effect estimate—the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different
Low	Confidence in the effect estimate is limited—the true effect may be substantially different from the estimate of the effect
Very Low	Very little confidence in the effect estimate—the true effect is likely to be substantially different from the estimate of effect

Results of Literature Search

The database search yielded 786 citations published between January 1, 2002, and February 12, 2013 (with duplicates removed). Articles were excluded based on information in the title and abstract. The full texts of potentially relevant articles were obtained for further assessment.

Three reviews met the inclusion criteria. (7-9) The reference lists of the included reviews as well as health technology assessment websites were hand searched to identify any additional potentially relevant studies, and no additional citations were identified.

Among the three reviews, one was determined to consist of studies which did not meet the rapid review inclusion criteria (7) and one was a review of other reviews. (8) The review of other reviews identified the third paper, Chudyk et al (9), in its examination of timing to start active rehabilitation. Therefore, for the purposes of this rapid review, the Chudyk et al systematic review is examined. (9)

Summary of Included Review

The objective of the Chudyk et al systematic review was to conduct a general examination of rehabilitation practices in the hip fracture literature. This review identified 55 studies spanning 6 rehabilitation intervention approaches (clinical pathways, early supported discharge, interdisciplinary care, exercise, occupational/physiotherapy, and discharge setting) in 3 types of settings (acute care hospital, inpatient rehabilitation, and outpatient rehabilitation). (9) Overall, this review concluded that there was limited standardization of the measurement and application of rehabilitation programs for hip fracture. (9)

In examining early supported discharge programs—which included active rehabilitation—Chudyk et al review included 4 publications, summarized in

Quality Assessment of Review

As assessed by the AMSTAR scoring of reviews, the Chudyk et al (9) review was determined to have a quality level of 5 out of a possible 11 (Appendix 2, Table A1).

Table 1. (9) No meta-analysis or other quantitative method to combine results was conducted. Chudyk et al concluded that there was limited evidence that early supported discharge was associated with either improved self-efficacy in protection against falls or short-term functional recovery. In addition, they found conflicting evidence around its impact on length of stay. (9)

Quality Assessment of Review

As assessed by the AMSTAR scoring of reviews, the Chudyk et al (9) review was determined to have a quality level of 5 out of a possible 11 (Appendix 2, Table A1).

Table 1: Summary of Studies Included in Review[a] of Early Supported Discharge

Author, Year	Location	Study Design	Sample Size	Intervention	Control	Results and Conclusion[b]
Crotty, 2002 (10)	Australia	RCT	66	Accelerated discharge home (< 48 hours) and immediate access to a rehabilitation program	Conventional care (hospital-based care and rehabilitation as usual)	There is evidence to support accelerated discharge from hospital with a home-based rehabilitation program in select patients.
Crotty, 2003 (11)	Australia	RCT (12 months follow-up)		Same as Crotty, 2002; see row above		↓ in caregiver burden No difference in patient outcomes
van Balen, 2002 (12)	The Netherlands	Prospective observational study	208	At 5 days post surgery there was a decision protocol for discharge plan	Usual practice	13-day ↓ in hospital LOS No difference in: • patient outcomes • cost (but a shift in where the costs were accumulated)
Jaglal, 2002 (13)	Ontario, Canada	Prospective observational study	65	Accelerated discharge home with a plan on postoperative day 3, and multiple roles by single care-providers (e.g., physiotherapist could help with care coordination)	Physiotherapy early intervention system (EIS) which includes services post-discharge in the home consisting of care-coordination nursing, physiotherapy, and homemaker assistance	4-day ↓ in hospital LOS No difference at follow-up in TUG or FIM ↑ in use of home-care services and associated costs

Abbreviations: FIM, Functional Independence Measure; LOS, length of stay; TUG, Timed-Up-and-Go.
[a]Review by Chudyk et al. (9)
[b]From the perspective of the intervention group versus the control group.

Summary of Outcomes of Interest

In 2 of the 4 publications identified by Chudyk et al the evaluation of time to rehabilitation is confounded by differences in the rehabilitation received by the intervention and control groups. The patients in the intervention group of the Crotty et al RCT and its follow-up paper received a comprehensive rehabilitation program consisting of multidisciplinary care team, while the control group received usual care which consisted of in-hospital rehabilitation and discharge planning. (10;11)

The studies by van Balen et al (12) and Jaglal et al (13) provided similar rehabilitation programs in both study arms, isolating the exposure of time to an active rehabilitation program. Therefore, these studies are evaluated to examine the outcomes of interest for this rapid review.

Both studies had their control groups continue with usual practice, while the intervention groups received formal discharge protocols within 3 to 5 days after surgery. (12;13) This resulted in a statistically significant decrease in post-surgical hospital length of stay for the intervention groups compared with control groups. (12;13) Both studies commented that this change would likely not translate into system-wide cost savings as costs would shift to outpatient services such as rehabilitation and home-care programs. (12;13)

Activities of Daily Living

The van Balen et al study used the Rehabilitation Activities Profile (RAP) to measure both ADL and instrumental ADL. (12) Quantitative results for these outcomes were not provided in the publication, but the authors stated that they found no difference between study groups at 4 months follow-up. (12) The Jaglal et al study examined FIM (a higher score indicates increased physical and cognitive ability) and Timed-Up-and-Go (TUG, a mobility test where time, in seconds, to complete the test is the indication of capability) at both hospital discharge and discharge from home-care services. (13) They identified no

significant difference between patient groups at the end of the study. (13) Results of these studies are summarized in Table 2.

Table 2: Summary of Results for Activities of Daily Living

	FIM[a]		TUG[a]		RAP at 4 months[b]
	At hospital discharge (score ± SD)	At home-care discharge (score ± SD)	At hospital discharge (seconds ± SD)	At home-care discharge (seconds ± SD)	
Intervention	44.9 ± 12.3	70.4 ± 5.1	77.6 ± 35.1	21.6 ± 11.1	NR
Control	56.8 ± 10.3	69.5 ± 7.5	48.8 ± 32.8	22.3 ± 12.4	NR
P value	0.0004	No significant difference	0.005	No significant difference	No significant difference

Abbreviations: FIM, Functional Independence Measure; NR, not reported; RAP, Rehabilitation Activities Profile; SD, standard deviation; TUG, Timed-Up-and-Go.
[a] Based on data reported in Jaglal et al. (13)
[b] Based on data reported in van Balen et al. (12)

Quality Assessment of Outcomes of Interest

Given the limited data available, GRADE cannot be applied to assess the quality of evidence for the outcome of RAP. There is very low quality of evidence for the outcomes of FIM and TUG (Appendix 2, Table A2)

Conclusions

There is insufficient evidence to indicate the optimal time to an active rehabilitation program after hip fracture surgery.

Acknowledgements

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Expert Panel for Health Quality Ontario: Episode of Care for Hip Fracture

Name	Role	Organization
Chair		
Dr. James Waddell	Orthopedic surgeon	St. Michael's Hospital, Toronto
Orthopedic Surgery		
Dr. John P. Harrington	Orthopedic surgeon	William Osler Health System, Toronto
Dr. Mark Harrison	Orthopedic surgeon	Queen's University, Kingston
Dr. Hans J. Kreder	Professor	Division of Orthopaedics, Department of Surgery, University of Toronto
Dr. Allan Liew	Orthopedic surgeon	Department of Surgery, University of Ottawa
Dr. Mark MacLeod	Orthopedic surgeon	London Health Sciences Centre
Dr. Aaron Nauth	Orthopedic surgeon	St. Michael's Hospital/University of Toronto
Dr. David Sanders	Orthopedic surgeon	London Health Sciences Centre
Dr. Andrew Van Houwelingen	Orthopedic surgeon	St. Thomas Elgin General Hospital
Anesthesiology		
Dr. Nick Lo	Staff anesthesiologist	St. Michael's Hospital, Toronto
Emergency Medicine		
Dr. Michael O'Connor	Emergency medicine	Kingston General Hospital
Dr. Lisa Shepherd	Emergency medicine	South West Local Health Integration Network (LHIN), London
Family Medicine		
Dr. Christopher Jyu	Physician lead, primary care	Central East LHIN, Ajax
Geriatrics		
Dr. Anna Byszewski	Geriatrician	The Ottawa Hospital
Dr. Maria Zorzitto	Chief of geriatric medicine	St. Michael's Hospital, Toronto
Physiotherapy		
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Rehabilitation		
Charissa Levy	Executive director	GTA Rehab Network
Dr. Peter Nord	Vice president, chief medical officer and chief of staff	Providence Healthcare, Toronto

Name	Role	Organization
Research		
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Professional Organizations		
Ravi Jain	Director, Ontario osteoporosis strategy	Osteoporosis Canada
Rhona McGlasson	Executive director	Bone and Joint Canada

Appendices

Appendix 1: Literature Search Strategies

Search date: February 12, 2013
Databases searched: Ovid MEDLINE, Ovid MEDLINE In-Process and Other Non-Indexed Citations, EMBASE; CINAHL; Cochrane Library; CRD
Limits: 2002-current; English
Filters: Meta-analysis, systematic reviews, heath technology assessments, RCTs and guidelines

Database: Ovid MEDLINE(R) <1946 to January Week 5 2013>, Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations <February 11, 2013>, EMBASE <1980 to 2013 Week 06>
Search Strategy:

#	Searches	Results
1	exp Hip Fractures/ use mesz	16222
2	exp Hip Fracture/ use emez	26495
3	((hip* or femur* or femoral* or trochant* or petrochant* or intertrochant* or subtrochant* or intracapsular* or extracapsular*) adj4 fracture*).ti,ab.	55825
4	((hip* or ((femur* or femoral*) adj3 (head or neck or proximal))) adj4 fracture*).ti,ab.	38575
5	or/1-4	69278
6	exp Rehabilitation/	332918
7	Rehabilitation Nursing/	1961
8	exp Rehabilitation Centers/ use mesz	11332
9	exp rehabilitation center/ use emez	8264
10	exp "Physical and Rehabilitation Medicine"/ use mesz	18976
11	exp rehabilitation medicine/ use emez	4537
12	exp rehabilitation research/ use emez	284
13	exp rehabilitation care/ use emez	7452
14	exp Hip Fractures/rh [Rehabilitation]	2151
15	exp hip fracture/rh [Rehabilitation]	2151
16	exp Physical Therapy Modalities/ use mesz	114382
17	exp physical medicine/ use emez	363451
18	exp mobilization/ use emez	15408
19	(rehabilitat* or habilitat* or movement therap* or physiotherap* or physical therap* or exercis* or occupational therap* mobili?ation or strength train*).ti,ab.	655369
20	or/6-19	1281990
21	Meta Analysis.pt.	36967
22	Meta Analysis/ use emez	68832
23	Systematic Review/ use emez	57208
24	exp Technology Assessment, Biomedical/ use mesz	8791
25	Biomedical Technology Assessment/ use emez	11440
26	(meta analy* or metaanaly* or pooled analysis or (systematic* adj2 review*) or published studies or published literature or medline or embase or data synthesis or data extraction or cochrane).ti,ab.	302266
27	((health technolog* or biomedical technolog*) adj2 assess*).ti,ab.	3953
28	exp Random Allocation/ use mesz	76124
29	exp Double-Blind Method/ use mesz	117322
30	exp Control Groups/ use mesz	1362
31	exp Placebos/ use mesz	31199
32	Randomized Controlled Trial/ use emez	336877
33	exp Randomization/ use emez	60702
34	exp Random Sample/ use emez	4568
35	Double Blind Procedure/ use emez	113044
36	exp Triple Blind Procedure/ use emez	37
37	exp Control Group/ use emez	41888

38	exp Placebo/ use emez	212539
39	(random* or RCT).ti,ab.	1412123
40	(placebo* or sham*).ti,ab.	454632
41	(control* adj2 clinical trial*).ti,ab.	39053
42	exp Practice Guideline/ use emez	285751
43	exp Professional Standard/ use emez	275459
44	exp Standard of Care/ use mesz	620
45	exp Guideline/ use mesz	23122
46	exp Guidelines as Topic/ use mesz	102366
47	(guideline* or guidance or consensus statement* or standard or standards).ti.	222418
48	(controlled clinical trial or meta analysis or randomized controlled trial).pt.	455849
49	or/21-48	3032841
50	5 and 20 and 49	1269
51	limit 50 to english language	1163
52	limit 51 to yr="2002-Current"	914
53	remove duplicates from 52	695

CINAHL

#	Query	Limiters/Expanders	Results
S1	(MH "Hip Fractures+")	Search modes - Boolean/Phrase	3,713
S2	((hip* or femur* or femoral* or trochant* or petrochant* or intertrochant* or subtrochant* or intracapsular* or extracapsular*) N4 fracture*)	Search modes - Boolean/Phrase	6,343
S3	((hip* or ((femur* or femoral*) N3 (head or neck or proximal))) N4 fracture*)	Search modes - Boolean/Phrase	5,032
S4	S1 OR S2 OR S3	Search modes - Boolean/Phrase	6,352
S5	(MH "Rehabilitation+")	Search modes - Boolean/Phrase	130,686
S6	(MH "Rehabilitation Nursing")	Search modes - Boolean/Phrase	1,982
S7	(MH "Rehabilitation Centers+")	Search modes - Boolean/Phrase	5,305
S8	(MH "Hip Fractures+/RH")	Search modes - Boolean/Phrase	487
S9	(MH "Physical Therapy Practice, Evidence-Based")	Search modes - Boolean/Phrase	1,172
S10	(MH "Physical Medicine")	Search modes - Boolean/Phrase	821
S11	(rehabilitat* or habilitat* or movement therap* or physiotherap* or physical therap* or exercis* or occupational therap* mobili?ation or strength train*)	Search modes - Boolean/Phrase	179,950
S12	S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11	Search modes - Boolean/Phrase	231,805
S13	S4 AND S12	Search modes - Boolean/Phrase	1,297
S14	(MH "Random Assignment") or (MH "Random Sample+") or (MH "Meta Analysis") or (MH "Systematic Review") or (MH "Double-Blind Studies") or (MH "Single-Blind Studies") or (MH "Triple-Blind Studies") or (MH "Placebos") or (MH "Control (Research)") or (MH "Practice Guidelines") or (MH "Randomized Controlled Trials")	Search modes - Boolean/Phrase	Display
S15	((health technology N2 assess*) or meta analy* or metaanaly* or pooled analysis or (systematic* N2 review*) or published studies or medline or embase or data synthesis or data extraction or cochrane or random* or sham*or rct* or (control* N2 clinical trial*) or guideline* or guidance or consensus statement* or standard or standards or placebo*)	Search modes - Boolean/Phrase	Display
S16	S14 or S15	Search modes - Boolean/Phrase	Display
S17	S13 AND S16	Search modes - Boolean/Phrase	309
S18	S13 AND S16	Limiters - English Language Search modes - Boolean/Phrase	303
S19	S13 AND S16	Limiters - Published Date from: 20020101-20131231; English Language Search modes - Boolean/Phrase	248

Cochrane Library

ID	Search	Hits
#1	MeSH descriptor: [Hip Fractures] explode all trees	968
#2	((hip* or femur* or femoral* or trochant* or petrochant* or intertrochant* or subtrochant* or intracapsular* or extracapsular*) near/4 fracture*):ti (Word variations have been searched)	1418
#3	((hip* or ((femur* or femoral*) adj3 (head or neck or proximal))) near/4 fracture*):ti (Word variations have been searched)	801
#4	#1 or #2 or #3	1712
#5	MeSH descriptor: [Rehabilitation] explode all trees	12263
#6	MeSH descriptor: [Rehabilitation Nursing] explode all trees	33
#7	MeSH descriptor: [Rehabilitation Centers] explode all trees	511
#8	MeSH descriptor: [Physical Therapy Modalities] explode all trees	12803
#9	MeSH descriptor: [Physical Medicine] explode all trees	293
#10	(rehabilitat* or habilitat* or movement therap* or physiotherap* or physical therap* or exercis* or occupational therap* mobili?ation or strength train*):ti (Word variations have been searched)	20590
#11	#5 or #6 or #7 or #8 or #9 or #10	35148
#12	#4 and #11 from 2002 to 2013	111

CRD

Line	Search	Hits
1	MeSH DESCRIPTOR hip fractures EXPLODE ALL TREES	167
2	((hip* or femur* or femoral* or trochant* or petrochant* or intertrochant* or subtrochant* or intracapsular* or extracapsular*) adj4 fracture*)):TI	126
3	((hip* or ((femur* or femoral*) adj3 (head or neck or proximal))) adj4 fracture*)):TI	104
4	#1 OR #2 OR #3	212
5	MeSH DESCRIPTOR rehabilitation EXPLODE ALL TREES	1376
6	MeSH DESCRIPTOR rehabilitation nursing EXPLODE ALL TREES	6
7	MeSH DESCRIPTOR rehabilitation centers EXPLODE ALL TREES	74
8	MeSH DESCRIPTOR physical therapy modalities EXPLODE ALL TREES	1588
9	MeSH DESCRIPTOR physical medicine EXPLODE ALL TREES	88
10	(rehabilitat* or habilitat* or movement therap* or physiotherap* or physical therap* or exercis* or occupational therap* mobili?ation or strength train*):TI	1291
11	#5 OR #6 OR #7 OR #8 OR #9 OR #10	2962
12	#4 AND #11	19
13	(#12):TI FROM 2002 TO 2013	12

Appendix 2: Quality Assessment Tables

Table A1: AMSTAR Score of Reviews[a]

Author, Year	AMSTAR score[a]	1) Provided Study Design	2) Duplicate Study Selection	3) Broad Literature Search	4) Considered Status of Publication	5) Listed Excluded Studies	6) Provided Characteristics of Studies	7) Assessed Scientific Quality	8) Considered Quality in Report	9) Methods to Combine Appropriate	10) Assessed Publication Bias	11) Stated Conflict of Interest
Chudyk, 2009 (9)	5	✓		✓				✓	✓			✓

[a] Details of AMSTAR method are described in Shea et al. (5)

Table A2: GRADE Evidence Profile for Examination of Optimal Timing to Begin an Active Rehabilitation Program

No. of Studies (Design)	Risk of Bias[a]	Inconsistency	Indirectness	Imprecision	Publication Bias	Upgrade Considerations	Quality
FIM							
1 (observational)	Very serious limitations (-2)[b]	No serious limitations	No serious limitations	No serious limitations	Undetected	None detected	⊕ Very Low
TUG							
1 (observational)	Very serious limitations (-2)[b]	No serious limitations	No serious limitations	No serious limitations	Undetected	None detected	⊕ Very Low

Abbreviations: FIM, functional independence measure; TUG, timed-up-and-go.
[a] See Table A3.
[b] Risk of bias limitations with eligibility criteria, measurement of outcome and control of potential confounding.

Table A3: Risk of Bias Among Observational Trials for the Examination of Optimal Timing to Begin an Active Rehabilitation Program

Author, Year	Appropriate Eligibility Criteria	Appropriate Measurement of Exposure	Appropriate Measurement of Outcome	Adequate Control for Confounding	Complete Follow-Up
Jaglal, 2002 (13)	Limitations[a]	No limitations	Limitations[b]	Serious limitations[c]	No limitations

[a] Patients were selected based on whether or not they might benefit from the intervention program.
[b] The sample size of the intervention group was small (n=15).
[c] Patients in the intervention group were statistically significantly older than patients in the control group, creating the potential for differences in disease burden, caregiver support, and access to health care, but these differences were not clearly discussed or adjusted for in the analysis.

References

(1) McGlasson R, MacDonald V, Lo N, Spafford D, McMullan JL, Beaupre L, et al. Waddell J, editor. National hip fracture toolkit [Internet]. Bone and Joint Decade Canada. 2011 [cited 2013 Feb]. 73 p. Available from: www.boneandjointcanada.com.

(2) Mak JC, Cameron ID, March LM. Evidence-based guidelines for the management of hip fractures in older persons: an update. Med J Aust. 2010 Jan 4;192(1):37-41.

(3) National Clinical Guideline Centre. The management of hip fracture in adults: methods, evidence & guidance [Internet]. London, UK: National Clinical Guideline Centre; 2011. [cited 2013 Feb]. 658 p. Available from: www.ncgc.ac.uk.

(4) Scottish Intercollegiate Guidelines Network. Management of hip fracture in older people: a national clinical guideline [Internet]. Edinburgh: Scottish Intercollegiate Guidelines Network; 2009. Available from: www.sign.ac.uk.

(5) Shea BJ, Grimshaw JM, Wells GA, Boers M, Andersson N, Hamel C, et al. Development of AMSTAR: a measurement tool to assess the methodological quality of systematic reviews. BMC Med Res Methodol. 2007;7:10.

(6) Guyatt GH, Oxman AD, Schunemann HJ, Tugwell P, Knottnerus A. GRADE guidelines: a new series of articles in the Journal of Clinical Epidemiology. J Clin Epidemiol. 2011 Apr;64(4):380-2.

(7) Chong CP, Savige J, Lim WK. Orthopaedic-geriatric models of care and their effectiveness. Australas J Ageing. 2009 Dec;28(4):171-6.

(8) Oliver D, Griffiths R, Roche J, Sahota O. Hip fracture. Clin Evid (Online). 2010;05.

(9) Chudyk AM, Jutai JW, Petrella RJ, Speechley M. Systematic review of hip fracture rehabilitation practices in the elderly. Arch Phys Med Rehabil. 2009 Feb;90(2):246-62.

(10) Crotty M, Whitehead CH, Gray S, Finucane PM. Early discharge and home rehabilitation after hip fracture achieves functional improvements: a randomized controlled trial. Clin Rehabil. 2002 Jun;16(4):406-13.

(11) Crotty M, Whitehead C, Miller M, Gray S. Patient and caregiver outcomes 12 months after home-based therapy for hip fracture: a randomized controlled trial. Arch Phys Med Rehabil. 2003 Aug;84(8):1237-9.

(12) van Balen R, Steyerberg EW, Cools HJ, Polder JJ, Habbema JD. Early discharge of hip fracture patients from hospital: transfer of costs from hospital to nursing home. Acta Orthop Scand. 2002 Oct;73(5):491-5.

(13) Jaglal S, Santaguida L, Kreder H, Neglie G, Coyte P, Scott J, et al. The At Home Early Discharge (AHEAD) program for hip fracture patients: results of a pilot study. Physiotherapy Canada. 2002;54:102-9.

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